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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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APPLIED MATERIALS, INC. 2881 SCOTT BLVD. M/S 2061 SANTA CLARA, CA 95050			MOORE, KARLA A	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 04/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/032,284	Applicant(s) CHEN ET AL.	
	Examiner Karla Moore	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14, 16-27, 29-42, 44-51, 53-74, 106-129 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14, 16-27, 29, 34, 41, 42, 44, 45, 49-51, 53-74 and 106-129 is/are rejected.
- 7) ☒ Claim(s) 30-33, 35-40 and 46-48 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0204</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 34 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. The term "small" in claim 34 is a relative term which renders the claim indefinite. The term "small" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Additionally, no specific values are given in the specification as to what Applicant considers "small". Claims 35-40 depend from claim 34; however, they are not indefinite because a standard for what Applicant considers "small" is provided.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the

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examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 3-5, 9, 11-14, 16-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,179,920 to Tarutani et al. in view of U.S. Patent No. 6,334,983 to Okayama et al.

7. Tarutani et al. disclose the invention substantially as claimed and comprising: a covering member (lid portion of reactor 3) comprising an expanding channel (inside conical volume) at a central portion of the covering member and comprising a bottom surface extending from the expanding channel to a peripheral portion of the covering member; and one or more gas conduits (1 and 2) coupled to the expanding channel, wherein the one or more gas conduits are positioned at an angle (0°) from the center of the expanding channel.

8. However, Tarutani et al. fail to teach the bottom surface comprises a tapered surface.

9. Okayama et al. teach tapering a surface adjacent to a processing chamber so that an edge is not formed, which results in improved plasma resistance and uniform gas distribution over a workpiece placed in the processing chamber (column 3, row 66 through column 4, row 100).

10. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a tapered bottom surface in Tarutani et al. in order to achieve improved plasma resistance and uniform gas distribution over a workpiece placed in the processing chamber as taught by Okayama et al.

11. Claims 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tarutani et al. and Okayama et al. as applied to claims 1, 3-5, 9, 11-14, 16-19 and 21 above, and further in view of U.S. Patent No. 4,907,534 to Huang et al.

12. Tarutani et al. and Okayama et al. disclose the invention substantially as claimed and as described above.

13. However, Tarutani et al. and Okayama et al. fail to teach a common purge gas source coupled to each gas conduit.

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14. Huang et al. teach an arrangement which includes coupling a common conduit, capable of supplying a purge gas, to gas conduits for the purpose of ensuring that the suitability of the reactor for multiple process gases and dopants for compound semiconductor materials such as quaternary or even more complex materials (column 2, rows 39-58).

15. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an arrangement which includes coupling a common conduit, capable of supplying a purge gas, to each of the gas conduits in Tarutani et al. and Okayama et al. in order to ensure the suitability of the reactor for multiple process gases and dopants for compound semiconductor materials such as quaternary or even more complex materials as taught by Huang et al.

16. Claims 1-2, 6-7, 10, 23-25, 29, 34, 44-45, 49-51, 53-58, 60-62, 106-114 and 116 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,383,330 to Raaijmakers in view of U.S. Patent No. 6,143,077 to Ikeda et al.

17. Raaijmakers discloses a chamber substantially as claimed in Figure 3 and comprising: a substrate support (50); a chamber lid (12) comprising a channel (70 and 72) at a central portion of the chamber lid and a tapered bottom surface (column 5, rows 19-21) extending from the channel to a peripheral portion of the chamber lid the tapered bottom surface shaped and sized to substantially cover the substrate receiving surface. The reaction zone is defined between the chamber lid and the substrate receiving surface, the reaction zone comprising a small volume (column 2, rows 46-51).

18. However, Raaijmakers fails to teach the channel as an expanding channel or one or more gas conduits coupled to the expanding channel, wherein the one or more gas conduits are positioned at an angle from a center of the expanding channel and wherein the one or more gas conduits comprises one or more valves; and one or more gas sources coupled to each valve.

19. Ikeda et al. disclose an expanding channel (44) for the purpose of producing a boundary layer of more uniform thickness, for delivering a uniform amount of precursor over a substrate and for improving the thickness distribution of the boundary layer in the circumferential direction on the same axis as the center of a substrate (column 8, rows 27-36). Ikeda et al. further teach the use of one or more gas

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conduits (421) coupled to the expanding channel, one or more valves (422) and one or more gas sources (42) for the purpose of forming a gas delivery system for deposition process. The one or more conduits are positioned at an angle ($0^{\circ}/360^{\circ}$) from a center of the expanding channel.

20. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an expanding channel in Raaijmakers in order to produce a boundary layer of more uniform thickness, to deliver a uniform amount of precursor over a substrate and to improve the thickness distribution of the boundary layer in the circumferential direction on the same axis as the center of a substrate as taught by Ikeda et al. Further, it would have been obvious to provide and a gas delivery system (conduits, valves, sources) in Raaijmakers in order to provide a gas for a deposition process as taught by Ikeda et al.

21. With respect to claims 24 and 25, the tapered bottom surface of the chamber lid in Raaijmakers comprises a surface selected from the group consisting of a straight surface, a concave surface, a convex surface or combinations thereof. The tapered bottom surface can further be described as shaped as a funnel.

22. With respect to claim 29, the one or more gas conduits in Ikeda et al. couple the one or more valves to the expanding channel.

23. With respect to claim 49-51, the tapered expanding channel of Ikeda et al. comprises a surface selected from the group consisting of a straight surface, a concave surface, a convex surface, or combinations thereof. The tapered expanding channel is shaped as a truncate cone. The tapered expanding channel comprises an upper portion and a lower portion, the upper portion having a smaller inner diameter the lower portion. See Figure 1.

24. With respect to claims 2 and 53, the one or more gas conduits in Ikeda et al. are disposed normal (before the bend) to a longitudinal axis of the expanding channel (see Figure 1 of Ikeda et al).

25. With respect to claims 54 and 62, the one or more gas conduits in Ikeda et al. are disposed at an angle ($0^{\circ}/360^{\circ}$) to a longitudinal axis/the center of the expanding channel (see Figure 1 of Ikeda et al).

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26. With respect to claims 55 and 56, the one or more gas conduits are angled downwardly/upwardly (see Figure 1 of Ikeda et al.).

27. With respect to claims 6-7, 10, 57-58 and 60-61, the one or more gas conduits are disposed along the length/at an upper portion of the expanding channel and the one or more gas conduits are disposed at the same length around the expanding channel (there is only one conduit), the one or more gas conduits are positioned toward the same circular direction (there is only one conduit),

28. With respect to claims 106-114 and 116, all of the limitations present in this group of claims are addressed above, except limitations recited in claims 113 and 116. With respect to claim 113, in Ikeda et al. the bottom surface of the covering member is substantially flat (not rough/see Figure 3). With respect to claim 116, each gas conduit (there is only one) is necessarily coupled to a separate reactant gas source.

29. Claims 8 and 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raaijmakers and Ikeda et al. as applied to claims 1-2, 6-7, 10, 23-25, 29, 34, 44-45, 49-51, 53-58, 60-62, 106-114 and 116 above, and further in view of WIPO Patent Publication No. 97/03223 to Nitescu et al.

30. Raaijmakers and Ikeda et al. disclose the invention substantially as claimed and as described above.

31. However, Raaijmakers and Ikeda et al. fail to teach the one or more gas conduits are equally spaced out around a perimeter of the expanding channel.

32. Nitescu et al. disclose a configuration of conduits evenly spaced about the circumference of an annular expanding channel for the purpose of uniformly distributing gases around the perimeter of a chamber (page 3, rows 23-31 and page 5, rows 5-11).

33. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided one or more gas conduits equally spaced around the perimeter of the expanding channel in Raaijmakers and Ikeda et al. in order to uniformly distribute gases around the perimeter of the chamber as taught by Nitescu et al.

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34. Claims 26-27 and 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raaijmakers and Ikeda et al. as applied to claims 1-2, 6-7, 10, 23-25, 29, 34, 44-45, 49-51, 53-58, 60-62, 106-114 and 116 above, and further in view of U.S. Patent No. 5,919,332 to Koshiishi et al.

35. Raaijmakers and Ikeda et al. disclose the invention substantially as claimed and as described above.

36. However, Raaijmakers and Ikeda et al. fail to teach a choke disposed on the chamber lid adjacent a perimeter of the tapered bottom surface and has an inner diameter at least as long as a diameter of the substrate receiving surface.

37. Koshiishi et al. teach the use of a choke (upper insulating member, 31) disposed on the chamber lid adjacent a perimeter of the tapered bottom surface and having an inner diameter at least as long as a diameter of the substrate receiving surface for the purpose of forming a narrow flow path around the perimeter of the reaction space so that gas is efficiently prevented from being diffused even in an atmosphere of high vacuum degree also there is not possibility that a leakage plasma will be directly diffused into the side and will spatter the inner side walls of the processing chamber (column 5, rows 17-32 and column 10, rows 25-28).

38. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a choke in Raaijmakers and Ikeda et al. in order to form a narrow flow path around the perimeter of the reaction space so that gas is efficiently prevented from being diffused even in an atmosphere of high vacuum degree also so that there is not possibility that a leakage gas will be directly diffused into the sides and will spatter the inner side walls of the processing chamber as taught by Koshiishi et al.

40. Claims 115 and 117 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raaijmakers and Ikeda et al. as applied to claims 1-2, 6-7, 10, 23-25, 29, 34, 44-45, 49-51, 53-58, 60-62, 106-114 and 116 above, and further in view of U.S. Patent No. 4,907,534 to Huang et al.

41. Raaijmakers and Ikeda et al. disclose the invention substantially as claimed and as described above.

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42. However, Raaijmakers and Ikeda et al. fail to teach a common purge gas source coupled to each gas conduit.

43. Huang et al. teach an arrangement which includes coupling a common conduit, capable of supplying a purge gas, to gas conduits for the purpose of ensuring that the suitability of the reactor for multiple process gases and dopants for compound semiconductor materials such as quaternary or even more complex materials (column 2, rows 39-58).

44. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an arrangement which includes coupling a common conduit, capable of supplying a purge gas, to each of the gas conduits in Raaijmakers and Ikeda et al. in order to ensure the suitability of the reactor for multiple process gases and dopants for compound semiconductor materials such as quaternary or even more complex materials as taught by Huang et al.

45. Claims 63-68, 71, 73, 118-126 and 128 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,383,330 to Raaijmakers in view of U.S. Patent No. 6,143,077 to Ikeda et al. and U.S. Patent No. 5,919,332 to Koshiishi et al.

46. Raaijmakers discloses a chamber substantially as claimed in Figure 3 and comprising: a substrate support (50) having a substrate receiving surface; and a gas delivery chamber comprising: a covering member/chamber lid (12) comprising a channel (70 and 72) extending from a central portion of the covering member/chamber lid and comprising a tapered bottom surface (column 5, rows 19-21) extending from the channel to a peripheral portion of the covering member/chamber lid the tapered bottom surface shaped and sized to substantially cover the substrate receiving surface. The reaction zone is defined between the covering member/chamber lid and the substrate receiving surface, the reaction zone comprising a small volume (column 2, rows 46-51).

47. However, Raaijmakers fails to teach the channel as an expanding channel or one or more gas conduits coupled to an upper portion of the expanding channel, wherein the one or more gas conduits are positioned at an angle from a center of the expanding channel and wherein the one or more gas conduits comprises one or more valves; and one or more gas sources coupled to each valve.

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48. Ikeda et al. disclose an expanding channel (44) for the purpose of producing a boundary layer of more uniform thickness, for delivering a uniform amount of precursor over a substrate and for improving the thickness distribution of the boundary layer in the circumferential direction on the same axis as the center of a substrate (column 8, rows 27-36). Ikeda et al. further teach the use of one or more gas conduits (421) coupled to an upper portion of the expanding channel and disposed at an angle from a center of the expanding channel, one or more valves (422) and one or more gas sources (42) for the purpose of forming a gas delivery system for deposition process. The one or more conduits are positioned at an angle ($0^{\circ}/360^{\circ}$) from a center of the expanding channel.

49. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an expanding channel in Raaijmakers in order to produce a boundary layer of more uniform thickness, to deliver a uniform amount of precursor over a substrate and to improve the thickness distribution of the boundary layer in the circumferential direction on the same axis as the center of a substrate as taught by Ikeda et al. Further, it would have been obvious to provide and a gas delivery system (conduits, valves, sources) in Raaijmakers in order to provide a gas for a deposition process as taught by Ikeda et al.

50. Raaijmakers and Ikeda et al. further fail to teach a choke disposed on the chamber lid adjacent a perimeter of the tapered bottom surface.

51. Koshiishi et al. teach the use of a choke (upper insulating member, 31) for the purpose of forming a narrow flow path around the perimeter of the reaction space so that gas is efficiently prevented from being diffused even in an atmosphere of high vacuum degree also there is not possibility that a leakage plasma will be directly diffused into the side and will spatter the inner side walls of the processing chamber (column 5, rows 17-32 and column 10, rows 25-28).

52. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a choke in Raaijmakers and Ikeda et al. in order to form a narrow flow path around the perimeter of the reaction space so that gas is efficiently prevented from being diffused even in an atmosphere of high vacuum degree also so that there is not possibility that a leakage gas will be

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directly diffused into the sides and will spatter the inner side walls of the processing chamber as taught by Koshiishi et al.

53. With respect to claim 64, the one or more gas conduits in Ikeda et al. are disposed normal (before the bend) to a longitudinal axis of the expanding channel (see Figure 1 of Ikeda et al).

54. With respect to claims 65, the one or more gas conduits in Ikeda et al. are disposed at an angle ($0^{\circ}/360^{\circ}$) to a longitudinal axis/the center of the expanding channel (see Figure 1 of Ikeda et al).

55. With respect to claims 66 and 67, the one or more gas conduits are angled downwardly/upwardly (see Figure 1 of Ikeda et al.).

56. With respect to claim 68, one or more valves are coupled to each gas conduit, as noted above.

57. With respect to claim 120, as noted above in Ikeda et al., the one or more gas conduits are disposed at an angle from a center of the expanding channel.

58. With respect to claim 121-122, the expanding channel in Ikeda et al. is shaped as a truncated cone and the expanding channel comprises an upper portion and a lower portion, the upper portion having a smaller inner diameter than the lower portion.

59. With respect to claim 123-125, the tapered bottom surface of the covering member in Raaijmakers comprises a surface selected from the group consisting of a straight surface, a concave surface, a convex surface, or combinations thereof, the tapered bottom surface is shaped as a funnel and the bottom surface is substantially flat/not rough.

60. With respect to claim 71, 73, 126 and 128, as noted above, one or more gas sources are coupled to each gas conduit in Ikeda et al. and a separate reactant gas source is coupled to each conduit (there is only one).

61. Claims 69 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raaijmakers and Ikeda et al. as applied to claims 63-68, 71, 73, 118-126 and 128 above, and further in view of U.S. Patent No. 5,224,513 to Bertone.

62. Raaijmakers and Ikeda et al. disclose the invention substantially as claimed and as described above.

63. However, Raaijmakers and Ikeda et al. fail to teach the one or more valves are selected from the group consisting of pneumatically actuated valves and electrically actuated valves or that the one or more valves are zero dead volume valves.

64. Bertone teaches the use of pneumatically, actuated zero dead volume valves for the purpose of introducing gases into a deposition apparatus using only one valve body, and avoiding pipe segments, dead spaces and joint leakage losses (U.S. abstract and Derwent equivalent abstracts).

65. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided pneumatically, actuated zero dead volume valves in Raaijmakers and Ikeda et al. in order to introduce gases into a deposition apparatus using only one valve body, and avoiding pipe segments, dead spaces and joint leakage losses as taught by Bertone.

66. Claims 72, 74, 127 and 129 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raaijmakers and Ikeda et al. as applied to claims 63-68, 71, 73, 118-126 and 128 above, and further in view of U.S. Patent No. 4,907,534 to Huang et al.

67. Raaijmakers and Ikeda et al. disclose the invention substantially as claimed and as described above.

68. However, Raaijmakers and Ikeda et al. fail to teach a common purge gas source coupled to each gas conduit.

69. Huang et al. teach an arrangement which includes coupling a common conduit, capable of supplying a purge gas, to gas conduits for the purpose of ensuring that the suitability of the reactor for multiple process gases and dopants for compound semiconductor materials such as quaternary or even more complex materials (column 2, rows 39-58).

70. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an arrangement which includes coupling a common conduit, capable of supplying a purge gas, to each of the gas conduits in Raaijmakers and Ikeda et al. in order to ensure the

suitability of the reactor for multiple process gases and dopants for compound semiconductor materials such as quaternary or even more complex materials as taught by Huang et al.

Allowable Subject Matter

71. Claims 30-33, 35-40, 46-48 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

72. The following is a statement of reasons for the indication of allowable subject matter:

73. With respect to claims 30-33, Raaijmakers and the other pieces of cited art fail to teach or fairly suggest the flow section ratios as defined in claims 30-33. The art fails to teach the formula for the ratio as recited or specific enough dimensions to determine whether or not the invention achieves the ratios as recited. Additionally, no other piece of prior art was found that provided the teaching and the appropriate motivation for combining the teaching with the cited prior art.

74. With respect to claims 35-40, Raaijmakers and the other pieces of cited art fail to teach or fairly suggest the relationship of chamber volume to substrate size as claimed as defined in claims 35-40. Additionally, no other piece of prior art was found that provided the teaching and the appropriate motivation for combining the teaching with the cited prior art.

75. With respect to claims 46-48, the prior art of record fails to teach the one or more gas conduits having an inner diameter which increases toward the expanding channel. Additionally, no other piece of prior art was found that provided the teaching and the appropriate motivation for combining the teaching with the cited prior art.

Response to Arguments

76. Applicant's arguments filed 1/30/04 have been fully considered but they are not persuasive. Admittedly, Okayama et al. do not teach a covering member with a tapered bottom surface. However, Okayama et al. and Tarutani et al. are relied upon in combination. Tarutani et al. teach a covering member with an expanding channel, a bottom surface and one or more gas conduits as recited. As noted

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above, Okayama et al. teach tapering a surface adjacent to a processing chamber so that an edge is not formed, which results in improved plasma resistance and uniform gas distribution over a workpiece placed in the processing chamber. This is motivation for providing a tapered surface in Tarutani et al. Examiner notes that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

77. Applicant's amendment and an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on 30 Jan 04 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action. 339

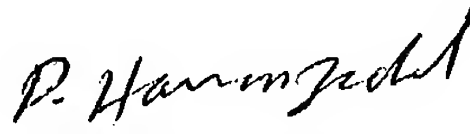
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 571.272.1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

km
20 April 2004


Parviz Hassanzadeh
Primary Examiner
Art Unit 1763